Case Report
JCAM

# A hidden etiology in a case of recurrent carpal tunnel syndrome: Giant cell tumor of the tendon sheath

A hidden etiology of the recurrent carpal tunnel syndrome

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**Abstract**

Giant cell tumors of the tendon sheath are the second most common neoplasms of hand and one of the rare reasons of carpal tunnel syndrome. Usually, the findings include swelling, tingling, pain, and loss of sense associated with the mass. A 54-year-old female patient with recurrent carpal tunnel syndrome had a massive lesion that was not detected on physical examination, but carpal tunnel compressed by the giant cell of the tendon sheath was detected through advanced investigations. Symptoms were resolved after surgical excision.

**Keywords**

Carpal Tunnel Syndrome; Hand; Wrist; Giant Cell Tumor

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## Introduction

Symptomatic median nerve compression in the carpal tunnel is called as the carpal tunnel syndrome. Symptoms are pain, weakness, and tingling throughout nerve extension [1].

Tenosynovial giant cell tumors are knowns as tendon sheath giant cell tumors and pigmented villonodular synovitis [2]. They are the second most common tumor of hand after simple ganglion cyst [3]. They are almost always benign tumors, but behave similar to some borderline tumors, because of their growth patterns, they have high local recurrence possibility [2,4].

Tenosynovial giant cell tumors are rarely reported as a reason of carpal tunnel syndrome and usually present with swelling at the volar location of the wrist besides carpal tunnel syndrome findings [5-9].

We reported a tenosynovial GCT case located in the carpal tunnel at a patient who has recurrent carpal tunnel syndrome without physical findings of a mass lesion.

## Case report

A 54-year-old female patient presented with tingling and sensory loss in the left hand. Left-hand carpal tunnel syndrome was diagnosed, and CTS release operation was performed at our center. The patient referred to us for recurrence of his complaints 1 year later. There were symptoms as pain, feeling loss, tingling during finger flexion-extension movements. These symptoms were severe, especially at nights. Except for the old incision scar on the wrist, there was no swelling or obvious pathological finding. Bi-directional radiography was taken in terms of additional pathology that may cause these symptoms. No additional pathologic findings were found after the X-ray [Figure 1]. Electromyographic findings were compatible with carpal tunnel syndrome.CTS release surgery and advanced research for additional intraoperative pathologies were planned. The operation was performed under axillary block. A pneumatical tourniquet was placed around the arm, and inflation was maintained during the surgical procedure. During the operation, the median nerve was reached, and the nerve seemed thickened and edematous [Figure2]. Flexor tendons were reached in depth of the nerve.

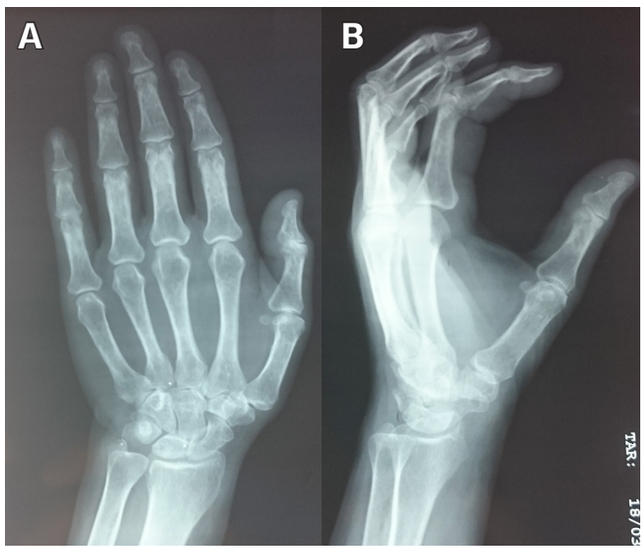


Figure 1. Preoperative anterio-posterior and lateral x-ray views of the patient's wrist (A,B)

Three different masses that suggest 3 different type of tumor were seen attached to the 2., 3. ve 4. flexor tendons. Tumors were attached to the tendons but had not invaded the tendon fascicles [Figure 3]. Affected tendons were dissected. All tumoral lesions were photographed together [Figure 4]. After excision and pernicious drain was applied, skin was repaired with non-absorbable sutures [Figure 5].

Postoperatively 1st-day Penrose drain was removed, and the patient went home with scar care every other day. Immobilization was not used. Complete healingwas occurred after 15 days. Histopathological examination revealed that the lesion was compatible with villonodular synovitis. Last clinical examination was performed at postoperative 24th month. The fingers had full range of motion and showed full recovery. Pain and other symptoms were improved. Local recurrence was not seen.

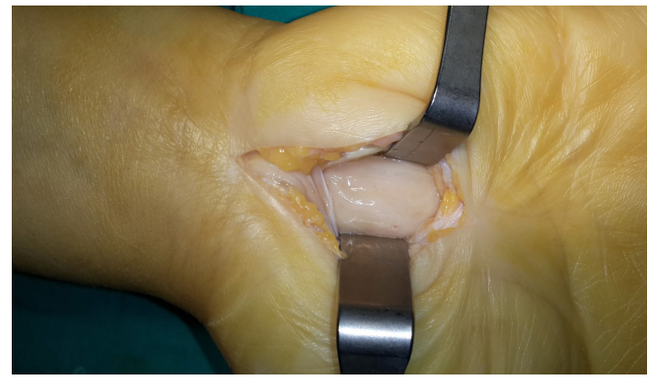

Figure 2. It is seen that the median nerve is edematous and increased in thickness in the picture

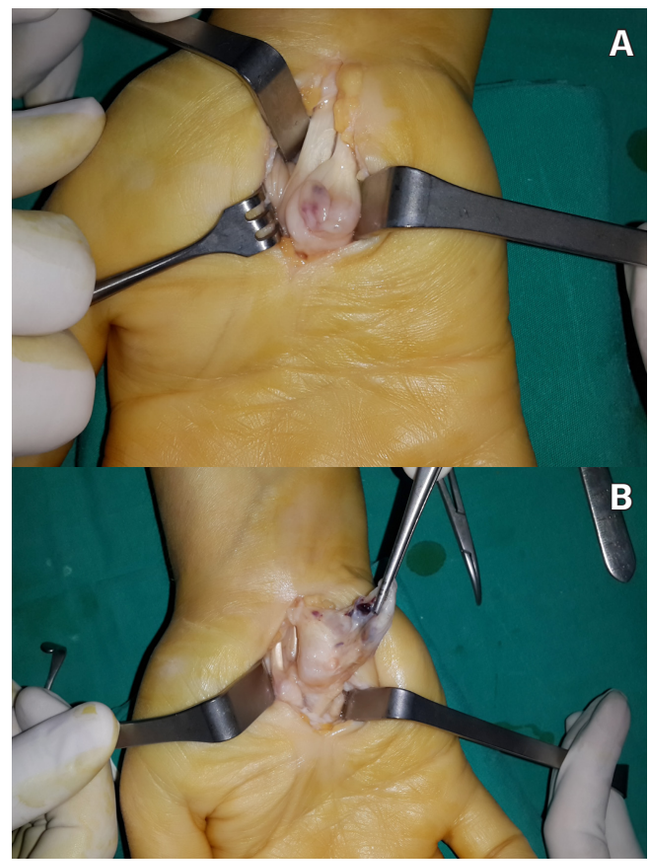


Figure 3. Tumoral lesions around the flexor tendons of wrist joint (A,B)

Figure 4. Post-resection images of all tumoral lesions

Figure 5. After a Penrose drain was placed, the wound ends were sutured

## Discussion

Carpal tunnel syndrome caused by carpal tunnel compression due to benign tumors is well known [10,11]. Because of the absence of space in the hand compartments, tumor is starting to press to neurovascular endings with rapid growth, and this leads to an atypical clinical presentation imitating the carpal tunnel syndrome [7].

The most common tumors causing carpal tunnel syndrome are lipomas, vascular malformations and ganglions [9].

Giant cell tumors of the tendon sheath are the second most common neoplasms of hand, locatofed 8% at digits. Wrist located giant cell tumors of tendon sheath are the rare reasons of CTS [6, 11].

Soft tissue GCTs are separated into 2 parts according to their origin as tenosynovial and nontenosynovial. Nontenosinovial GCTs are rare, their behavior changes from borderline malignancy to complete malignancy [6].

Tenosynovial GCTs are known as Tendon Sheath GCT or PVNS. Almost all of them have benign behaviors; but they have high local recurrence possibility because of their growth patterns [2, 6].

In the literature, a malignant giant cell tumor-associated carpal tunnel syndrome case has also been reported [6].

First of all, a case report must be original like any scientific article. It must give a new message [12, 13]. In patients who have carpal tunnel syndrome because of a mass, there are findings as swelling at volar face of the wrist or pain during finger movements besides pain and weakness [5,9]. In our case, the pain provocation during finger movements of hand was uncertain. Also, there was no swelling that would suggest a mass lesion on physical examination.Direct radiography is useful in some soft tissue tumors and some soft tissue localized non-tumoral lesions [14]. In case of carpal tunnel syndrome due to mass lesion, standard x-ray evaluations usually do not help. It just may be seen as a homogenous opacity in the soft tissue [15]. In this case, direct radiographs did not contribute to reaching the diagnosis.Generally, MR imaging is recommended in patients who have atypical symptoms, sudden onset symptoms or clinical mass lesion or young patients [7]. MRI is useful in many tumors, especially helpful in evaluating malignancy development [16].

The current treatment method for simple carpal tunnel syndrome cases are open, mini-open or endoscopic carpal tunnel releasing [17]. In the case of carpal tunnel syndrome due to mass lesions, surgical resection of the mass leads to relaxation of the compressed nerve endings. In this study, the patient's mass was resected by inserting the old incision line.

### *Conclusion*

One of the rare causes of carpal tunnel syndrome is soft tissue mass. These lesions do not always provide significant clinical evidence to suggest mass. Especially in the patients who have recurrent carpal tunnel syndrome, we are recommending that physicians should be suspicious about mass lesion existence and we are also recommending examination by ultrasound or MRI.

### *Scientific Responsibility Statement*

***The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.***

### *Animal and human rights statement*

***All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.***

### *Conflict of interest*

***None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.***

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